Media Konservasi Vol. 16, No. 2 Agustus 2011 : 92 – 94

NUTRITIONAL ANALYSIS OF ANOA (*Bubalus depressicornis* and *Bubalus quarlesi*) FOOD PLANTS IN TANJUNG PEROPA WILDLIFE RESERVE, SOUTHEAST SULAWESI

(Analisis Kandungan Nutrisi Pakan Anoa Bubalus spp. di Suaka Margasatwa Tanjung Peropa Sulawesi Tenggara)

ABDUL HARIS MUSTARI[1)]

[1)]*Department of Forest Resources Conservation, Faculty of Forestry Bogor Agricultural University (haris.anoa@yahoo.com)*

Diterima 24 Jannuary 2011/Disetujui 27 Juli 2011

ABSTRAK

Sebanyak 46 jenis tumbuhan dan dua jenis buah dikumpulkan dari habitat asli anoa (insitu) di Suaka Margasatwa Tanjung Peropa Sulawesi Tenggara. Analisis kandungan nutrisi makanan anoa diketahui dengan menggunakan metode Proximate Analyses. Hasil penelitian menunjukkan bahwa persentase kandungan nutrisi makanan anoa di habitat aslinya bervariasi. Kandungan protein bervariasi 5,58 -21,60 (rataan 12,70; SD 4,34), sementara kandungan serat kasar bervariasi dari 14,68 sampai 62,68 (rataan 36,93; SD 12,07). Persentase Ektrak Ether adalah 0,91-11,5 (rataan 2,38; SD 1,75). Persentase kandungan NFE (Nitrogen-Free Extractives) berkisar 0,76 dan 52,31 (rataan 24,64; SD 15,20), dan kandungan energi kasar adalah 2419-3583 kal/gram (rataan 3093; SD 282,82).

Kata kunci: Anoa, Bubalus spp., kandungan nutrisi.

INTRODUCTION

Very little is known about the dietary ecology of these animals in their natural habitats because of their secretive nature and their occupation of the most remote tropical rain forests on the island including lowland forests, rocky-cliff forests and mountainous forests. Qualitative description of the diet of anoa, based on browsing signs left by the animals in the wild, have been reported by a few field biologists (Syam, 1977; Foead, 1992; Tikupadang *et al*., 1994; Mustari, 1995, 2003) who variously described the food plants of anoa as including herbs, aquatic plants, grasses, fern, mosses, fruit, leaves of shrubs, young leaves and lianas. Mustari (1995) listed 33 species of plants browsed by lowland anoa in Tanjung Amolengo Wildlife Reserve and analyzed the nutritional content of nine food plants of anoa collected in the reserve.

This study aims to reveal nutritional content of anoa food plant in their natural habitat. This study was focused on dietary ecology of lowland anoa in their wild habitat. These dietary data add to our understanding of the feeding ecology and dietary resources of the animals, which are needed in managing populations and habitats of the animals on the island. More importantly, these data contribute significantly to conservation and management planning for the animals to ensure that in the future this endangered species will still be found inhabiting their natural habitats in that fragile ecosystem, the tropical rain forest.

METHODS

Study site

This study was conducted in Kalobo Forest of Tanjung Peropa wildlife reserve from 2000 to 2003. The wildlife reserve situated between 122^0 45' – 122^0 45' East and 4^0 35' - 4^0 57' South covering a forested area of 38, 937 ha which is 140 km south of Kendari, the capital city of Southeast Sulawesi province.

Nutritional content of anoa food plants

Forty-six species of food plants that were known eaten (Mustari 2003) by anoa were collected. One kilogram (fresh weight) of leaves, shoots and young twigs of each of the food plants was collected from the field. Due to the high humidity in the forest (80-100%), the food plant samples were sun-dried to prevent the growth of fungi and other microbial organisms on the leaves of the fresh food plants that might affect the nutritional content of the food plants. The food plant samples were then oven-dried for 48 hrs at 70^0C at the laboratory of Biological Sciences of Halu Oleo University of Southeast Sulawesi before their nutritional contents were examined at the laboratory of Feed Science, Faculty of Animal Science of Bogor Agricultural University, using Proximate analysis. Proximate analysis divides the food plants into six fractions: dry matter, ash, crude protein, crude fibre, ether extract, and nitrogen-free extractives. Mineral content (Ca and P) and gross energy values of the dietary plants were also examined.

RESULTS AND DISCUSSION

The nutritional contents of the 46 species of anoa food plants and two species of fruits that were known to be eaten by the animals in their natural habitat were presented in Table 1 and Table 2. Some of the analysed food plants, such as *Merremia peltata*, *Physalis minima*, and bamboos (*Schizostachyum lima* and *cf Schizostachyum brachycladum*), were also identified microscopically as the predominant food plants in the diets of the animals (Mustari 2003).

Percentages of the nutrients in the food plants varied considerably. Percent of crude protein was 5.58 - 21.60 (mean 12.70; SD 4.34), while percent of crude fibre varied from 14.68 to 62.68 (mean 36.93; SD 12.07). Percentage of ether extract in the food plants was 0.91-11.5 (mean 2.38; SD 1.75). Percent of nitrogen-free extractives ranges between 0.76 and 52.31 (mean 24.64; SD 15.20), while gross energy of the food plants was 2419-3583 cal/g (mean 3093; SD 282.82). The majority (65%) of the food plants have a percentage of crude protein above 10%.

Merremia peltata, *Physalis minima*, and bamboos (*Schizostachyum lima* and *cf Schizostachyum brachycladum*), which were among the predominant food plants of anoa in Kalobo, did not differ significantly in percentages of their nutritional contents, except that *Physalis minima* contained a comparatively high proportion of crude protein (20.04%). *Merremia* which composed about one-third of the proportion of the diets of the animals, has only 11.66% of crude protein and the bamboos *Schizostachyum lima* and *cf Schizostachyum brachycladum* had even lower crude protein contents, 10.44% and 6.06% respectively. These bamboos have a high content of crude fibre, 37.54% and 43.07% respectively.

Other inferred food plants that have relatively high percentages of crude protein included *Trema orientalis* (21.60%), *Acalypha boehmerioides* (19.82%), and cf *Micromelon minutum* (19.38%), yet they were not found in the analyzed faecal samples of the animals. *Sonneratia alba*, a mangrove species, was frequently browsed by lowland anoa in Amolengo and showed the highest percentage of nitrogen-free extractives (52.31%) among the food plants, yet its crude protein content (10.45%) did not significantly differ from those of other food-plant species.

Crude protein and crude fibre contents of the fruits of *Diospyros pilosanthera* and *Eugenia* sp. are lower than those of their leaves and shoots (as expected), yet higher nitrogen-free-extractives and gross energy suggest that these fruits have higher digestibility and the animals could get instant energy by consuming the fruits (Table 2). In general, young leaves and shoots have higher protein content and lower crude fibre than older leaves (McDonald *et al*., 1995). High-quality foods contain easily digestible carbohydrates and proteins, and low-quality foods are usually old, tough and woody or fibrous and indigestible; and the high-quality foods are young, soft and green (Jarman and Sinclair, 1979).

CONCLUSION

Percentages of the nutrients in the food plants of anoa varied considerably. Percent of crude protein was 5.58 -21.60 (mean 12.70; SD 4.34), while percent of crude fibre varied from 14.68 to 62.68 (mean 36.93; SD 12.07). Percentage of ether extract in the food plants was 0.91-11.5 (mean 2.38; SD 1.75). Percent of nitrogen-free extractives ranges between 0.76 and 52.31 (mean 24.64; SD 15.20), while gross energy of the food plants was 2419-3583 cal/g (mean 3093; SD 282.82). The majority (65%) of the food plants have a percentage of crude protein above 10%.

ACKNOWLEDGEMENTS

Financial support for this study was provided by the Australian Development Scholarship (ADS). I thank Prof Peter Jarman of UNE for his guidance, support and courage in collecting the data and during the writing and finishing of this project. I appreciate the helps of the staffs of the Bureau of Natural Resources Conservation (KSDA) of Kendari. This study would never have been completed without the assistance of many people in the forests, especially La Tie, Ahmad S.Si., Pak La Uno, Pak Kadir, Pak Sungkono, Antu, Engu, Idar and Tia for their help during the field work.

REFERENCES

Foead N. 1992. Studi habitat dan pakan anoa gunung (*Bubalus [Anoa] quarlesi*, Ouwen) di Taman Nasional Lore Lindu, Sulawesi Tengah [BSc. Thesis]. Fakultas Kehutanan, Universitas Gadjah Mada.

Jarman P, Sinclair ARE. 1979. Feeding strategy and the pattern of resource partitioning in ungulates. In: Sinclair ARE and Norton-Griffiths M, Eds. *Serengeti* : *Dynamics of An Ecosystem*. Chicago: Chicago University Pr. Pages 130-163.

Mustari AH., 1995. Population and behaviour of lowland anoa (*Bubalus depressicornis*) in Tanjung Amolengo Wildlife Reserve, Southeast Sulawesi, Indonesia. MSc. Thesis, Georg-August University, Gottingen, Germany.

Mustari AH. 2003. Ecology and conservation of lowland anoa (*Bubalus depressicornis*) in Sulawesi, Indonesia. PhD Dissertation. University of New England. Australia.

Syam A. 1997. Studi habitat dan populasi anoa datarn rendah (*Anoa depressicornis* H. Smith) di Cagar Alam Gunung Tangkoko Batuangus, Sulawesi

Utara. BSc. Thesis. Fakultas Kehutanan Institut Pertanian Bogor, Indonesia.

Tikupadang TH. Gunawan H, Sila M. 1994. Habitat dan populasi anoa dataran tinggi (*Bubalus quarlesi*) di Cagar Alam Faruhumpenai di Kabupaten Luwu, Sulawesi Selatan. *J Penelit Kehut* 8(1):27-37.